



Inventors: Barber et al.  
U.S. Application No.: 09/355,221  
International Application No.: PCT/US98/01196  
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Respectfully submitted,

Date: May 17, 2000



David A. Gay  
Registration No.: 39,200  
Telephone: (858) 535-9001  
Facsimile: (858) 535-8949

Campbell & Flores LLP  
4370 La Jolla Village Drive  
7<sup>th</sup> Floor  
San Diego, California 92122  
USPTO CUSTOMER NO. 23601

Form PTO 1449 US Department of Commerce Patent and Trademark Office	ATTY DOCKET NO: P-IU 3610	U.S. APPLICATION NO. 09/355,221 INTERNATIONAL APPLICATION NO. PCT/US98/01196
	APPLICANT: Barber et al.	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	INTERNATIONAL FILING DATE: 21 January, 1998	GROUP: 1643

### U.S. PATENT DOCUMENTS

EXAM. INITIALS		DOCUMENT NUMBER	DATE	NAME	CLASS -	SUB- CLASS	FILING DATE
		5,254,678	10/19/93	Haseloff et al.	536	23.2	08/05/92
		5,270,163	12/14/93	Gold et al.	435	6	08/17/92
		5,354,855	10/11/94	Cech et al.	536	24.1	02/28/92
		5,496,698	03/05/96	Draper et al.	435	6	12/07/92
		5,567,588	10/22/96	Gold et al.	435	6	06/05/95
		5,574,143	11/12/96	Haselhoff et al.	536	23.2	02/08/94
		5,574,967	11/12/96	Dent et al.	455	12.1	01/11/94
		5,580,967	12/03/96	Joyce	536	23.2	05/13/94
		5,595,877	01/21/97	Gold et al.	435	6	05/16/95
		5,610,054	03/11/97	Draper	435	363	01/13/94
		5,637,459	06/10/97	Burke et al.	435	6	08/02/94
		5,670,637	09/23/97	Gold et al.	536	22.1	03/27/95
		5,683,867	11/04/97	Biesecker et al.	435	6	04/28/94
		5,688,935	11/18/97	Stephens et al.	536	23.1	05/03/95

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		5,696,249	12/9/97	Gold et al.	536 -	23.1	03/24/95
		5,705,337	01/06/98	Gold et al.	435	6	03/08/95
		5,712,375	01/27/98	Jensen et al.	530	412	05/03/95
		5,723,289	03/03/98	Eaton et al.	435	6	09/20/94
		5,723,592	03/03/98	Eaton et al.	536	23.1	06/05/95
		5,750,342	05/12/98	Stephens et al.	435	6	05/03/95
		5,763,177	06/09/98	Gold et al.	435	6	09/16/94
		5,763,566	06/09/98	Jensen et al.	530	350	05/03/95
		5,763,595	06/09/98	Gold et al.	536	22.1	06/05/95
		5,773,598	06/30/98	Burke et al.	536	231	06/05/95
		5,789,157	08/04/98	Jensen et al.	435	6	05/03/95
		5,789,160	08/04/98	Eaton et al.	435	6	06/05/95
		5,817,785	10/06/98	Gold et al.	536	23.1	11/13/96
		5,843,653	12/01/98	Gold et al.	435	6	06/06/95
		5,853,984	12/29/98	Davis et al.	435	6	06/07/95

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		5,858,660	01/12/99	Eaton et al.	435 -	6	03/20/96
		5,861,254	01/19/99	Schneider et al.	435	6	01/31/97
		5,864,026	01/26/99	Jensen et al.	536	23.1	05/03/95
		5,874,218	02/23/99	Drolet et al.	435	6	04/05/96

#### FOREIGN PATENT DOCUMENTS

EXAM. INITIALS		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION (YES/NO)
		WO 92/01806	02/06/92	PCT			
		WO 93/23569	11/25/93	PCT			
		WO 94/26877	11/25/94	PCT			
		WO 96/01314	01/18/96	PCT			

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages)

		Akhtar et al., "Molecular DIY with hairpins and hammerheads," <u>Nature Medicine</u> 1:300-302 (1995).
		Anderson et al., "Mutagenesis of the hairpin ribozyme," <u>Nucleic Acids Res.</u> 22:1096-1100 (1994).
		Bassi et al., "The ion-induced folding of the hammerhead ribozyme: Core sequence changes that perturb folding into the active conformation," <u>RNA</u> 2:756-768 (1996).
		Bennett and Cullimore, "Selective cleavage of closely-related mRNAs by synthetic ribozymes," <u>Nucleic Acids Research</u> 20:831-837 (1992).
		Berzal-Herranz et al., "In vitro selection of active hairpin ribozymes by sequential RNA-catalyzed cleavage and ligation reactions," <u>Genes and Development</u> 6:129-134 (1992).
		Bratty et al., "The hammerhead RNA domain, a model ribozyme" <u>Biochim. et Biophys. Acta</u> 1216:345-359 (1993).
		Cameron and Jennings, "Specific gene suppression by engineered ribozymes in monkey cells," <u>Proc. Natl. Acad. Sci. USA</u> 86:9139-9143 (1989).
		Campbell and Cech, "Identification of ribozymes within a ribozyme library that efficiently cleave a long substrate RNA," <u>RNA</u> 1:598-609 (1995).

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	Cech and Bass, "Biological catalysis by RNA," <u>Ann.- Rev. Biochem</u> 55:599-629 (1986).
	Cech and Uhlenbeck, "Hammerhead nailed down," <u>Nature</u> 372:39-40 (1994).
	Chowrira et al., "Ionic requirements for RNA binding, cleavage, and ligation by the hairpin ribozyme," <u>Biochemistry</u> 32:1088-1095 (1993).
	De Young et al., "Catalytic properties of hairpin ribozymes derived from chicory yellow mottle virus and arabis mosaic virus satellite RNAs," <u>Biochemistry</u> 34:15785-15791 (1995).
	Dropulić et al., "Functional characterization of a U5 ribozyme: intracellular suppression of human immunodeficiency virus type 1 expression," <u>J. Virol.</u> 66:1432-1441 (1992).
	Feldstein et al., "Two sequences participating in the autolytic processing of satellite tobacco ringspot virus complementary RNA," <u>Gene</u> 82:53-61 (1989).
	Gold et al., "Diversity of oligonucleotide functions," <u>Annu. Rev. Biochem.</u> , 64:763-797 (1995).
	Gold et al., "From oligonucleotide shapes to genomic SELEX: Novel biological regulatory loops," <u>Proc. Natl. Acad. Sci. USA</u> , 94:59-64 (1997).
	Gold et al., "SELEX and the evolution of genomes," <u>Current Opinion in Genetics &amp; Development</u> , 7:848-851 (1997).

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	Hampel et al., "Hairpin catalytic RNA model: evidence for helices and sequence requirement for substrate RNA," <u>Nucl. Acids Res.</u> 18:299-304 (1990).
	Kijima et al., "Therapeutic applications of ribozymes," <u>Pharmac. Ther.</u> 68:247-267 (1995).
	Leavitt et al., "Transfer of an anti-HIV-1 ribozyme gene into primary human lymphocytes," <u>Human Gene Therapy</u> 5:1115-1120 (1994).
	Lieber and Strauss, "Selection of efficient cleavage sites in target RNAs by using a ribozyme expression library," <u>Mol. Cell. Biol.</u> 15:540-551 (1995).
	Macejak and Draper, "Design of quasi-random ribozyme expression vectors," <u>J. Cell. Biochem. Supplement</u> 17E, S206:202 (1993).
	Ojwang et al., "Inhibition of human immunodeficiency virus type 1 expression by a hairpin ribozyme," <u>Proc. Natl. Acad. Sci. USA</u> 89: 10802-10806 (1992).
	Sioud et al., "Preformed ribozyme destroys tumour necrosis factor mRNA in human cells," <u>J. Mol. Biol.</u> 223:831-835 (1992).
	Thompson et al., "Ribozymes in gene therapy," <u>Nature Medicine</u> 1:277-278 (1995).
	Welch et al., "A potential therapeutic application of hairpin ribozymes: in vitro and in vivo studies of gene therapy for hepatitis C virus infection," <u>Gene Therapy</u> 3:994-1001 (1996).

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		Yamada et al., "Intracellular immunization of human T cells with a hairpin ribozyme against human immunodeficiency virus type 1," <u>Gene Therapy</u> 1:38-45 (1994).
		Yamada et al., "Activity and cleavage site specificity of anti-HIV-1 ribozyme in human T cells," <u>Virology</u> 205:121-126 (1994).
		Yu et al., "A hairpin ribozyme inhibits expression of diverse strains of human immunodeficiency virus type 1," <u>Proc. Natl. Acad. Sci. USA</u> 90:6340-6344 (1993).
		Yu et al., "Intracellular immunization of human fetal cord blood stem/progenitor cells with a ribozyme against human immunodeficiency virus type 1," <u>Proc. Natl. Acad. Sci. USA</u> 92:699-703 (1995).
		Yu et al., "In Vitro and in Vivo characterization of a second functional hairpin ribozyme against HIV-1," <u>Virology</u> 206:381-386 (1995).

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